TWO YEARS AFTER

INFORMATION REGARDING THE "1934 WELL REPLENISHMENT PROJECT"

Santa Clara Valley Water Conservation District

STEVENS CREEK RESERVOIR

Capacity 4,000 Acre Feet — 1,306,800,000 Gallons

Originally Estimated to Cost $479,000, will Actually Cost $447,000; A Saving to the District of $32,000.

THERE IS NO SUBSTITUTE FOR WATER

TD
225
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1936
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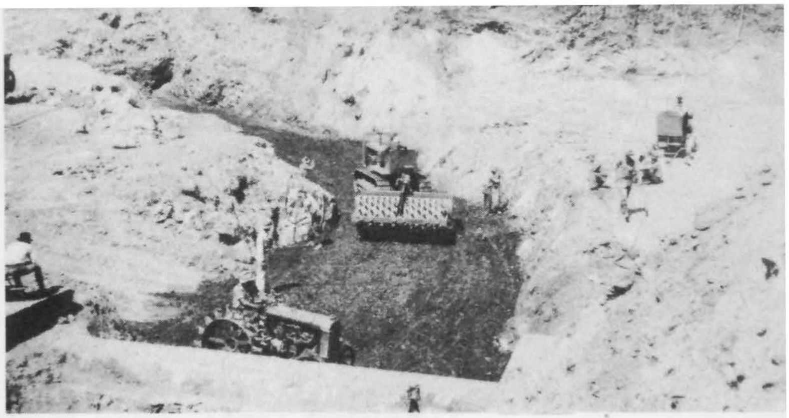

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COUNTY FLOOD CONTROL AND
WATER DISTRICT
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To the Voters of the District:

Four hundred thousand dollars are needed for the completion of the District's project, including the six dams and reservoirs. The Board of Directors has called a bond election for Tuesday, May 12th, at which you will pass upon the question of voting bonds to provide this sum.

WHY $400,000 NEEDED

This money is necessary chiefly because the State of California, in the interest of safety, demanded that the Coyote Dam be made much larger and more massive than originally contemplated. While the Stevens Creek Dam was constructed for about $32,000 less than the Engineer's estimate, and the other structures for approximately the amount of his estimates, the Coyote Dam, because of its greatly increased size, over-ran the estimates by over $300,000.

The Coyote Dam lies right square across a major active earthquake fault. The extent to which the adjoining mountains have been riven, shattered and faulted, and the nature of the footing, could not have been known until the foundation for the dam was excavated. Then the State Engineer, together with his consulting board of engineers and geologists, decided and ordered that the dam, instead of being built between the canyon walls where they were closest together, should be moved upstream so as to be above these natural abutments. The State authorities insisted that no expense be spared to prevent a repetition of the St. Francis and Johnstown disasters. The District, of course, concurred in that decision.

On other portions of the project there has been some unanticipated expense, as in the relocation of the roads, for the road authorities demanded that the new roads be built better and on a more modern alignment than the old roads.

Furthermore, the P. W. A. Grant now turns out to be possibly $100,000 less than the $720,000 originally expected. However, it is anticipated that the expenditure of the moneys to complete the project will bring the P. W. A. Grant to at least $673,000.

The expenses of administration, Engineers' fees and legal fees have been under the amounts previously estimated, and are within the amounts approved, before the work started, by the Citizens' Advisory Committee consisting of Messrs. Frank C. Mitchell, chairman, Paul Davies, Frazier O. Reed, Will Lester and R. I. Meyerholz.

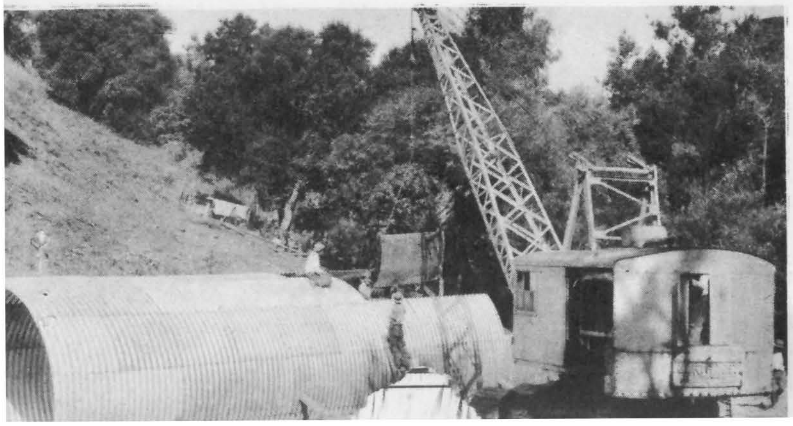
The increased massiveness of the Coyote Dam, however—about four times as large as it would have been if built where the canyon walls are narrowest—has been the chief cause of the over-run in the cost of the project.

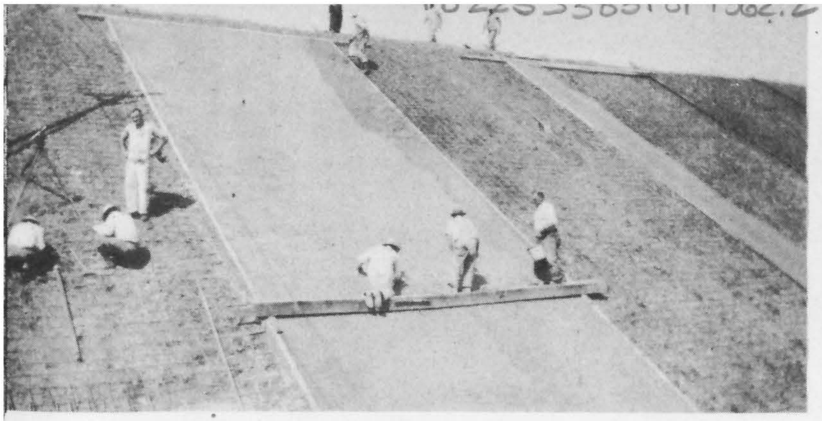
HOW FUNDS CAN BEST BE RAISED

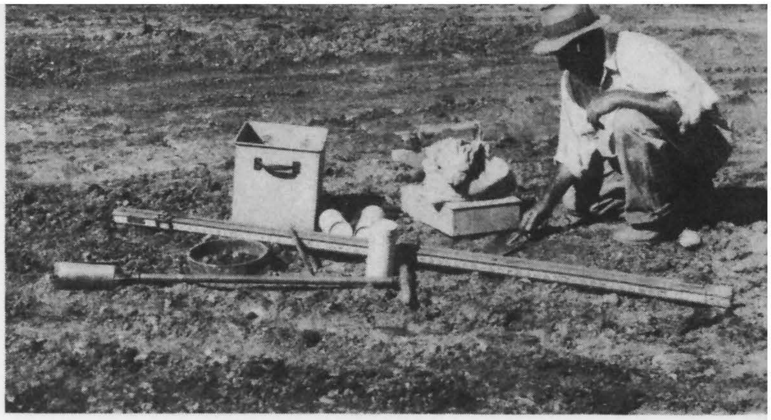
There are two ways to provide the funds for the completion of the project—a bond issue or a special assessment.

The Board of Directors recommends a bond issue, which requires a two-thirds vote, because by deferring the payment of principal on the proposed new issue until after the former issue has been reduced by over $400,000, there will be no increase in the tax rate for bond purposes.

The second method is by special assessment, which can be voted by a majority of the electors of the Dis-







trict, but would have to be paid in not to exceed four annual installments. This special assessment, however, would nearly double the tax rate.

The Board therefore unqualifiedly recommends the plan of raising the money by a bond issue.

CRISIS IF BONDS NOT VOTED

If the bonds should not be voted, the money to complete the project will nevertheless have to be paid, but with a rate of interest twice as high as from the sale of bonds. The contractors and landowners will reduce their claims to judgments, which will carry interest at the rate of 7 per cent, whereas interest on the bonds should be approximately half that rate—in fact, the former issue sold at approximately 3-1/3 per cent.

Furthermore, the structures cannot be used until the landowners whose lands are flooded have been paid. In no reservoir site have all of the lands yet been paid for. The six dams have been operated this past winter through the sufferance of the landowners.

Also the State of California, which has jurisdiction over the construction and licensing of dams, will not permit the Coyote Dam to be used until it is finished and thoroughly safe. At the present time the spillway on the Coyote Dam is not completed, nor the dam protected with the 100,000 cubic yards of rock facing required by the State.

Likewise the Calero Reservoir cannot be used beyond a minor portion of its capacity, until the McKean Road, which runs through it, it relocated.

Until the lands in the various reservoir sites have been paid for, until the McKean Road is rebuilt, and until the District is permitted by the State to use the Coyote Dam, the outlet works at all six reservoirs will have to be kept open and the District, although it has spent over two and a quarter million dollars on the project, will be prevented from utilizing the structures or saving the winter floods.

In adition, the money now due the District from the P. W. A. amounting to over $200,000 may be withheld until the Federal Government is assured that the balance of the funds on the District's part will be forthcoming.

CONCLUSION

The works must be completed. They must be paid for before they can be used.

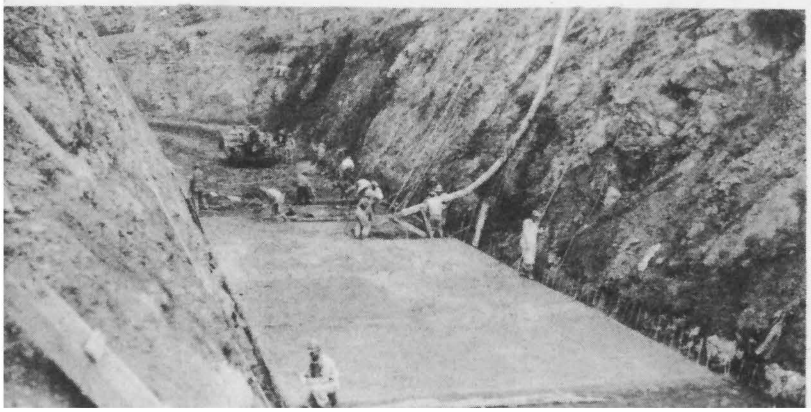
In order to get the benefits of the money already spent, which have resulted in raising the water level in the Valley 13 feet over this same day a year ago and a saving of $150,000 per year in the cost of pumping (as set forth in greater detail in the remaining portion of this pamphlet), we have no alternative but to raise the funds to complete the project.

A bond issue is by far the least burdensome method to the taxpayer of procuring the necessary funds. It is the only method by which we can be sure of the immediate right to use the structures. Until they are paid for the outlet pipes, whenever landowners in the reservoir sites insist, will have to be kept wide open and an investment of more than two and a quarter million dollars rendered idle.

BOARD OF DIRECTORS

J. Fred Holthouse	Reginald L. Parry
Harry G. Mitchell	Stephen W. Pfeifle
Wm. F. Noethig	R. P. Van Orden

S. D. Farrington, *President*



The Coyote Unit

(Coyote Reservoir — Coyote Canal — Coyote Percolating Dam)

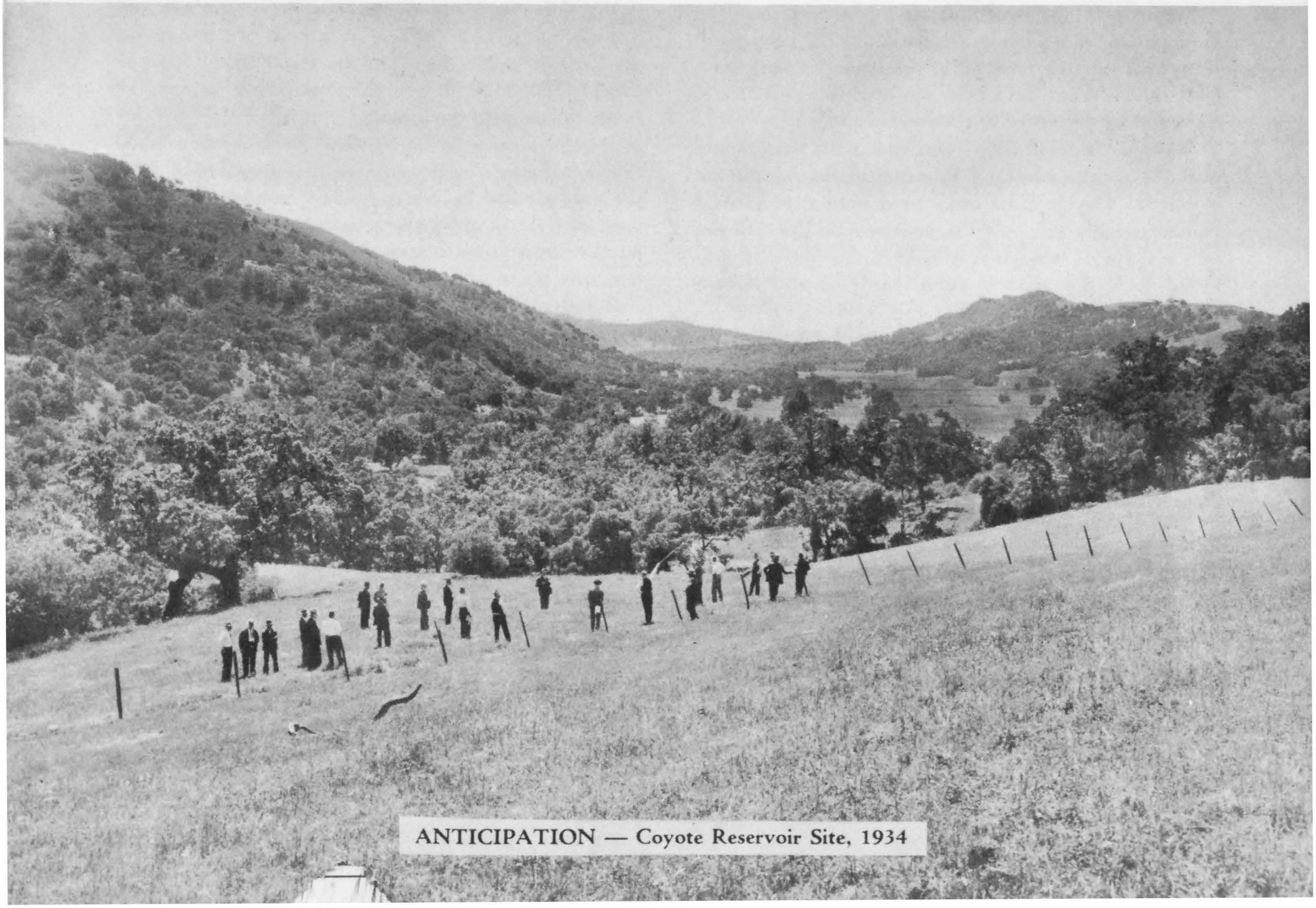
The Coyote Reservoir and the other detention reservoirs constitute the dominant and most important feature of the entire project.

The storage of the surplus waters that would otherwise go to waste and their gradual release into our streams so that they may continue to flow for many months in place of for a few weeks is what replenishes our wells and builds up our underground water supply.

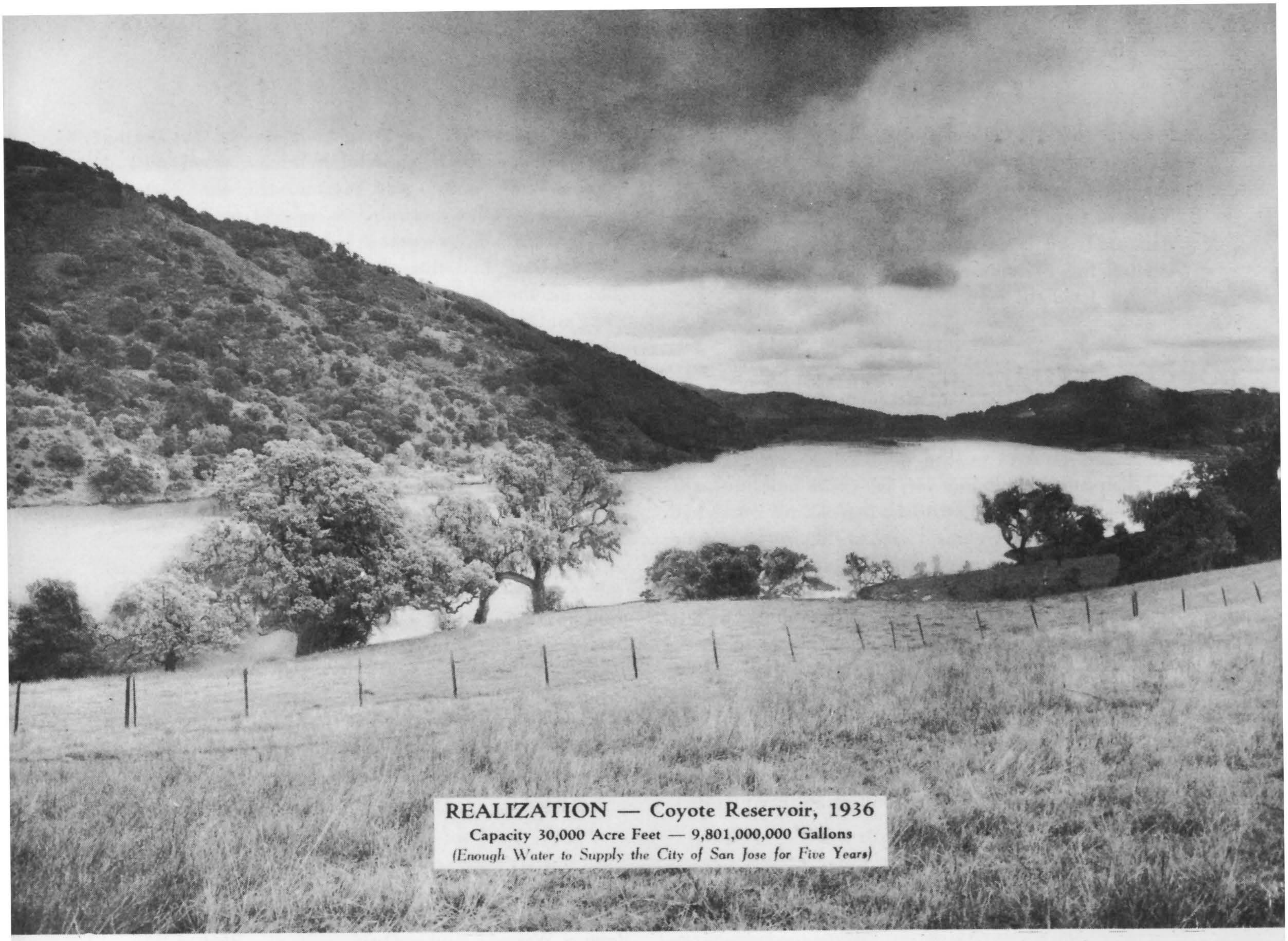
This Coyote Reservoir is the largest single feature of the entire project, and because of its vast size and the great amount of water it holds, great care has been exercised in its construction. In addition, this dam straddles the Hayward fault and will be subject to earthquake disturbances; hence, the final approval of this dam by the State Engineer was held in abeyance for many months, during which time a special Consulting Board composed of two eminent engineers and a geologist with wide experience in the construction of dams made many expensive additions to the design of the structure, finally requiring a structure nearly four times as massive as required for the other dams on this project, and, in particular, requiring the dam to be moved from the natural damsite up into the reservoir.

Numerous expensive changes were also required during the construction of the dam in the interests of greater safety, and even after the preparation of the dam foundation was completed to the satisfaction of the Engineer of the District and his consulting engineers and geologist on June 30, 1935, a great deal of additional foundation excavation was required by the State, delaying the work and making it more expensive. In addition to this, and contrary to expectation, comparatively little good rock for the rock-fill blanket of the dam was uncovered during the foundation and spillway excavations, so that it finally became necessary to obtain the bulk of the rock-fill from the Larios Canyon quarry about one mile distant, at another great additional expense.

All of these changes, in the interest of greater safety, plus additional costs of rights-of-way, have increased



ANTICIPATION — Coyote Reservoir Site, 1934



REALIZATION — Coyote Reservoir, 1936
Capacity 30,000 Acre Feet — 9,801,000,000 Gallons
(Enough Water to Supply the City of San Jose for Five Years)

the total cost of this unit by $330,000. The unit costs in this and all other structures were well within the Engineer's estimate, but when the thickness of the dam was made half again as much, it naturally greatly increased the total cost (see Table I next page).

Work Completed

To date, the construction of the Vasona Dam and Canal, the Stevens Creek Dam, the Guadalupe Dam, the Almaden Dam, the Calero Dams, Almaden-Calero Canal, certain streambed improvements, and about eighty per cent of the Coyote Dam have been completed, except for rights-of-way necessary to enable the structures to be utilized.

Remaining Work Required

Although the project, in its present unfinished state, has conserved about two-thirds of the water which would otherwise have run to waste this winter, there still remains considerable work to be done to insure operation, under control, of the District's two largest reservoirs, the Coyote and the Calero.

The Coyote Dam, in its present unfinished state, cannot be considered safe for the storage of water in a wet season, and the State will not license the structure for use until it is completed according to the original plans. The valves could not be safely closed this year until a considerable portion of the storage space had been vacated, and even then not until close to the end of the rainy season.

The Coyote Canal is still considered necessary, because without it a very considerable portion of our reservoir releases are lost before they reach our District, and there are extensive claims that they also damage some territory without our District. The reservoir releases can be by-passed with nominal transit losses through the proposed Coyote Canal to the head of our District, and thus be conserved for well replenishment within our District. The diversion dam will be so

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CORRECTION — Page 7, Column 2, Paragraph 2, Line 3: The word "insufficient" should read "sufficient".

designed that all natural stream flow will continue to pass down the river and only reservoir releases of stored flood water will be by-passed through the canal.

The Calero Reservoir cannot be used until the McKean Road is reconstructed, and before we had it half full this season we were ordered to empty it until we unwatered the road.

Operating Results

During the first year of construction on the project, the season of 1934-35, the rainfall was exceptionally well distributed, including very beneficial and unusually late, heavy rains. The District's percolating works had been completed and were in use, so that with the total inflow into the Valley of about 99,000 acre feet, but 28,500 acre feet was wasted. This present season, however, the bulk of the runoff was concentrated during two and one-half weeks of continuous precipitation. The District's two largest reservoirs, the Coyote and the Calero, were not yet complete, so it was not possible to use them to their full efficiency. Nevertheless, the Government's gaugings indicate that had it not been for the reservoirs, approximately two-thirds of the water supply for this season to date would have been wasted.

The most important thing to realize is that during the prolonged flood stages of February, when most of this season's runoff was concentrated, the waste in the entire Valley amounted to only 31 per cent of the seasonal runoff, whereas it would have amounted to 68 per cent had there been no storage. Due to the storage, the amount of this concentrated runoff, which has and will be made useful, will be 69 per cent, and would have been but 32 per cent had it not been for the control exercised by the reservoirs on most of the principal streams. These figures check rather closely with the general engineering conclusions prior to the construction of the reservoirs, that without control about two-thirds of the water supply is wasted and one-third used, whereas with control two-thirds is used and one-third wasted.

The reservoirs were operated very satisfactorily and all of them stored a considerable amount of water during the month. In February the total amount of runoff amounted to 87,070 acre feet, of which 33,200 acre feet, or 38 per cent, remained in storage at the end of the month and 53,870 acre feet, or 62 per cent, entered the District and was measured at the gauging stations on the various streams. Of this 53,870 acre feet that entered the District, 51 per cent was used and percolated.

UNIT	Estimated total costs in 1934 Well Replenishment Project Report including Rights of Way	Spent to Date	Present Estimated total cost including Rights of Way
COYOTE, including Coyote Dam, access Road and Reservoir and Coyote Canal	$ 631,000	$ 574,161.76	$ 960,000
ALMADEN-CALERO, including Calero Dams and Reservoir, Almaden Dam and Reservoir, Almaden-Calero Conduit and necessary road relocation	869,000	723,737.85	993,000
GUADALUPE, including Guadalupe Dam and Reservoir and necessary road relocation	350,000	345,668.64	376,000
STEVENS, including Stevens Creek Dam and Reservoir and necessary road relocation	479,000	382,812.70	447,000
STREAMBED IMPROVEMENT PROJECTS, including Vasona Dam and Canal and Percolating Works on Minor Streams	354,000	244,838.33	307,000
TOTALS	$2,683,000	$2,271,219.28	$3,083,000

TABLE I

The steady operation of the percolating areas builds up vast underground water mounds which, during last year, had been built up to a volume of about 100,000 acre feet, the average rise in the wells in this area being about 50 feet. Just as soon as the stream flow ceased, the artesian area dropped down very sharply, the ground water mounds flattened out gradually until the beginning of new runoff in 1936, but as they flattened out they held up the central or main portion of the District so there was comparatively little mid-summer drop. The average low point reached in the central portion of the District was but 5 feet below the high point and at least 10 feet higher than the low point of the previous year.

On April 15, 1936, the average water level in the ground water mounds was 8 feet higher than at the same date of the previous year, and the average water level in the main or central portion of the Valley was 13 feet higher.

Even though some stored water had to be wasted because of incompletion of the works in the Almaden and Coyote water shed, **there is still insufficient water in storage to keep the main streams of the Valley supplying the principal percolating areas until mid-summer, and the water at the present time in all portions of the Valley is higher than it was one year ago and rising faster than at any previous time since records have been kept.**

Condensed Statement of Obligations, Future Requirements and Probable Income

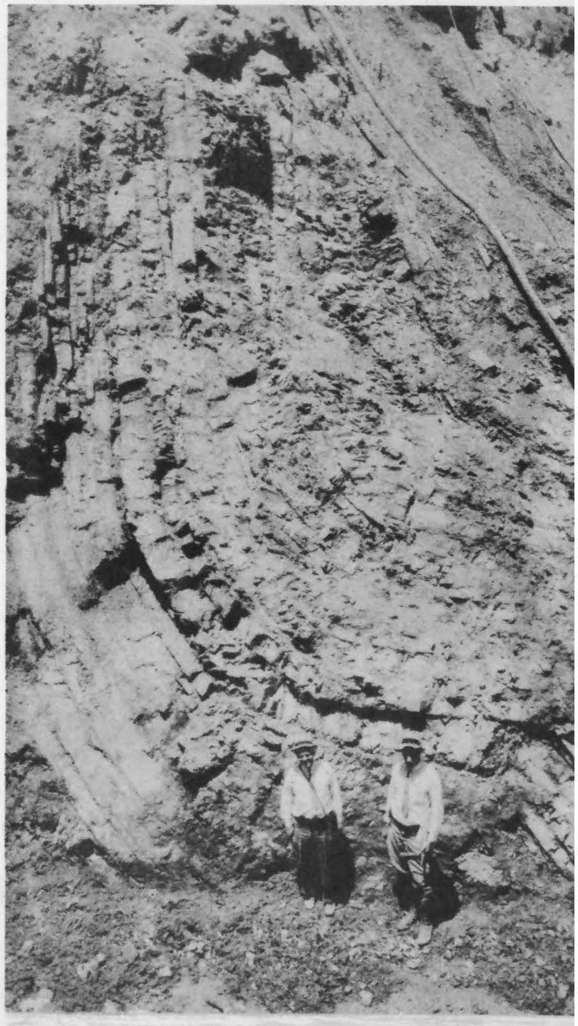
OBLIGATIONS AND REQUIREMENTS

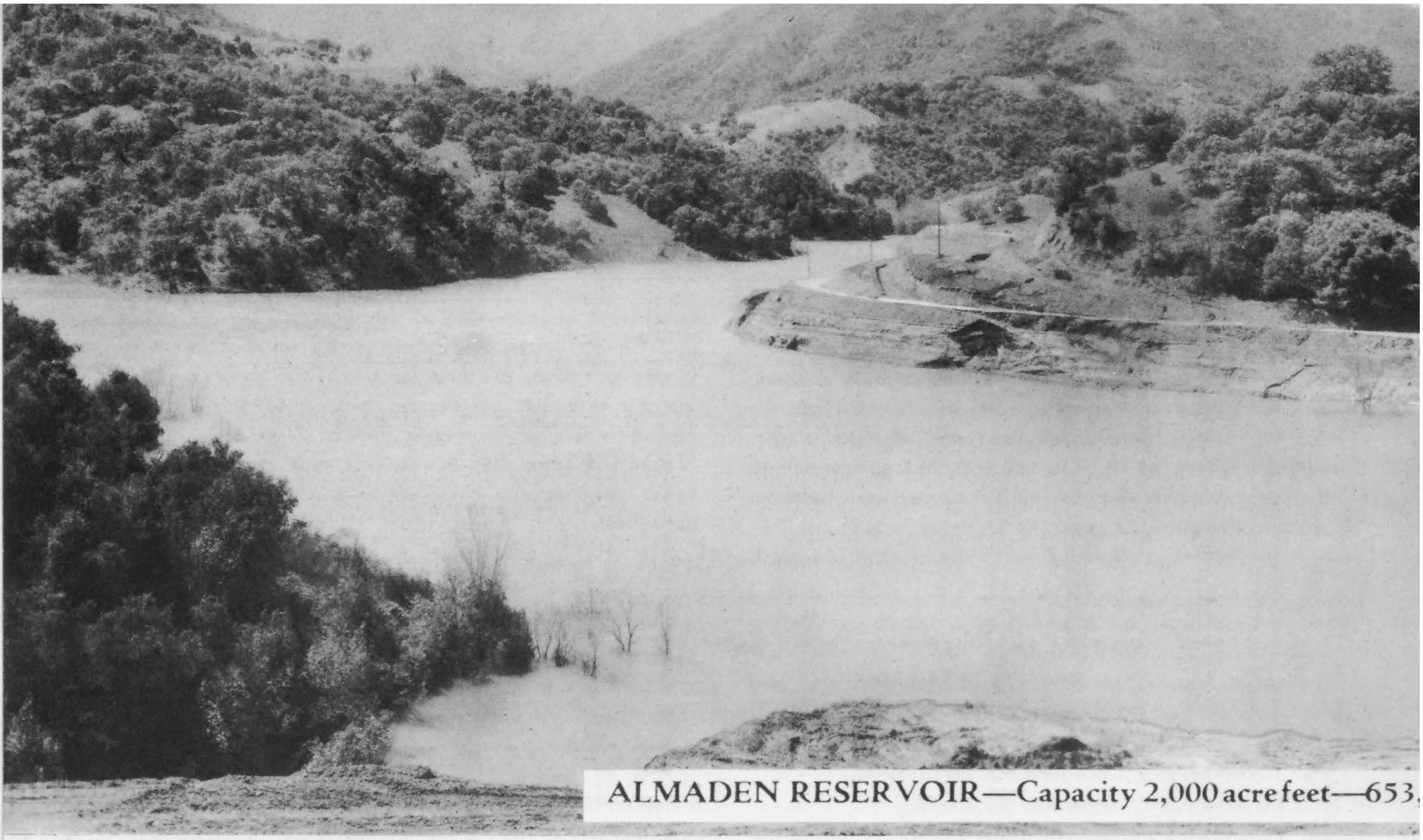
A. Present Obligations now due and unpaid:		
(1) Due Contractors and Engineer........		$ 54,461.00
B. Retention, Contract No. 2 due 4-2-36......		139,313.16
C. Payment, Contract No. 5		
(1) Retention to 3-10-36 due 8-1-36........	$128,992.50	
(2) Partial Paym't on material due 8-1-36	35,797.32	165,789.82
D. Estimated Additional Funds required for:		
(1) Coyote, including Coyote Dam and Reservoir and Coyote Canal............		163,690.86
(2) Administration, Engineering and Legal Expenses..................................		36,135.32
(3) Rights of Way (Estimated by Right of Way Commission)............		165,079.24
(4) Additional State Filing Fees............		4,000.00
(5) Miscellaneous Construction, including Streambed Improvement, Percolating Works and Road Relocation		74,726.50
(6) Allowance for Unforeseen Contingencies		75,000.00
		$878,195.90

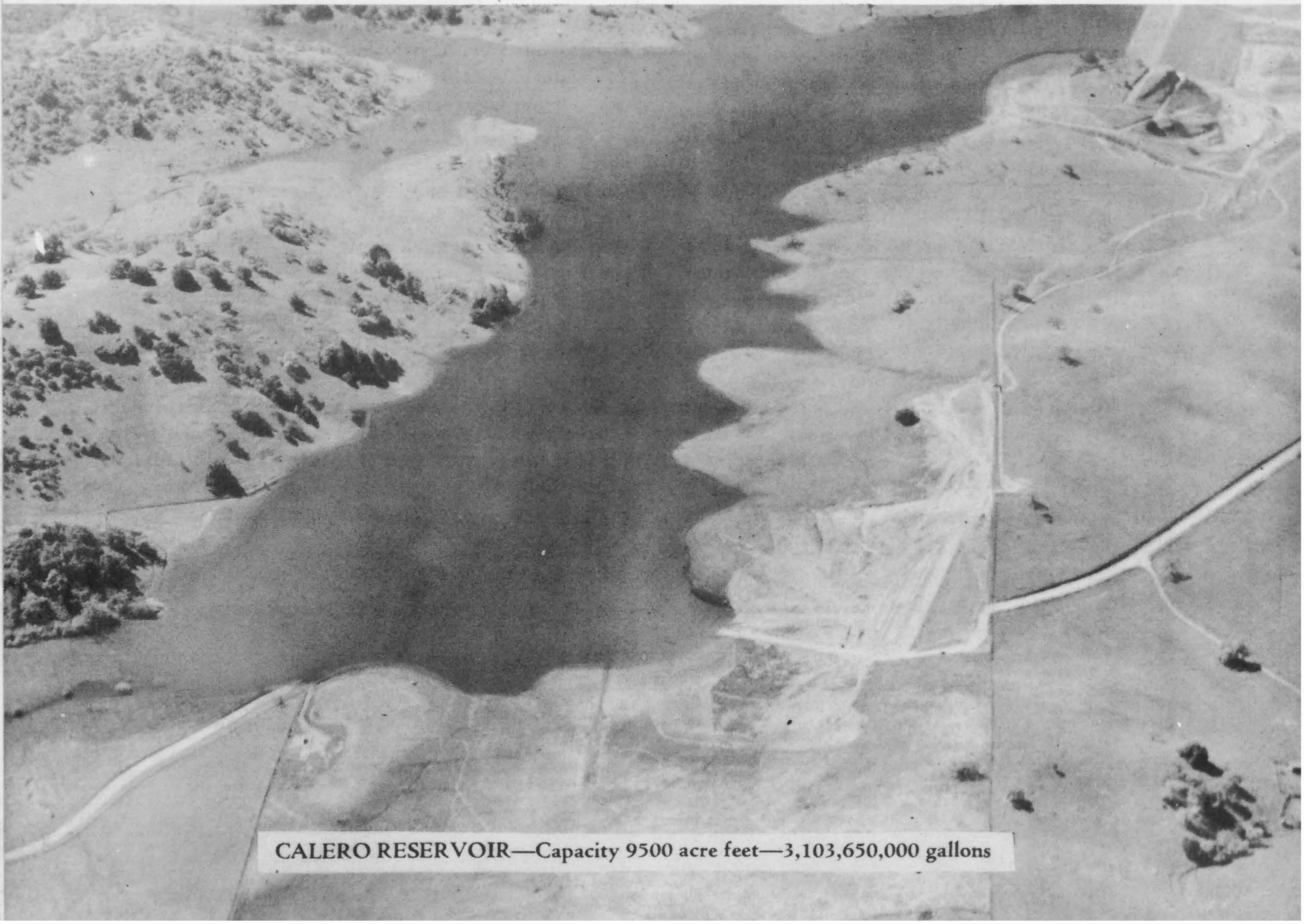
PROBABLE INCOME

A. Balance in Improvement Fund................		138,890.47
B. Estimated Salvage from Rights of Way		40,000.00
C. Federal Grant	$673,000.00*	
Less Receipts to date........................	373,694.57	299,305.43
D. DEFICIT (to be met by Sale of Bonds)		400,000.00
		$878,195.90

*This is the amount of the PWA grant approved in the Government Contract of August 27, 1934; it being assumed that the additional construction costs herein, for labor and materials, will result in the District earning the balance of the grant.




ALMADEN RESERVOIR—Capacity 2,000 acre feet—653


CALERO RESERVOIR—Capacity 9500 acre feet—3,103,650,000 gallons

,000 gallons

Almaden-Calero Unit

The Almaden Reservoir, the Calero Reservoir and the Almaden-Calero Canal must be considered as a single unit of the project and operated as such.

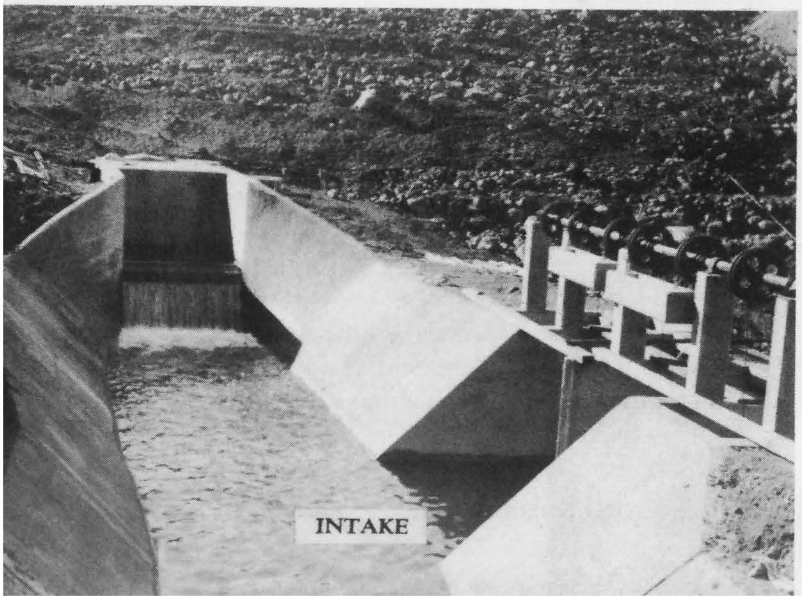
The Almaden Reservoir in itself is not sufficiently large to care for the run-off of the Alamitos Creek and the run-off of the Calero Creek is insufficient to fill the Calero Reservoir, but operated jointly, through the use of the Almaden-Calero Canal, they will completely control the run-off of both the Alamitos (Almaden) and Calero Creeks.

Before this unit can be utilized the District must acquire the necessary rights-of-way and relocate the McKean Road. This can be done from the proceeds of the additional $400,000 of bonds which the people of the District are asked to vote.

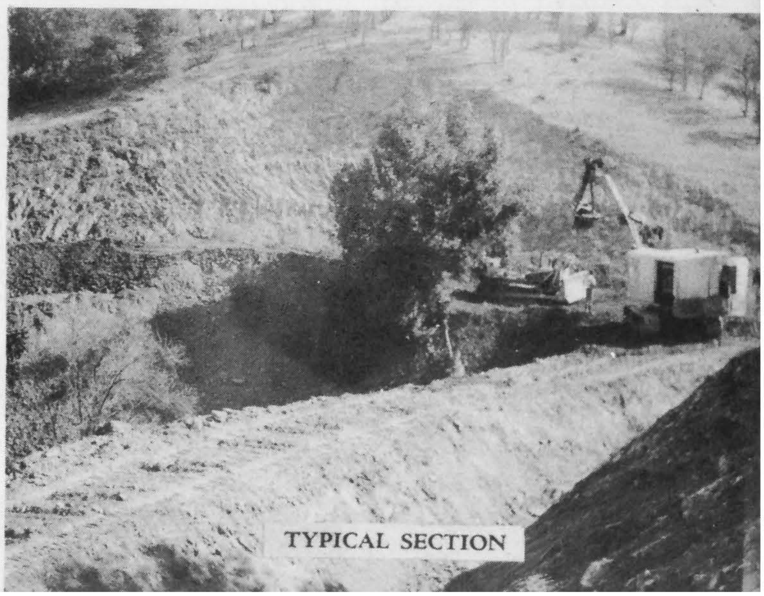
The necessity for completing this work is well illustrated by what happened this year (1936) when the District transferred water from the Almaden Reservoir to the Calero Reservoir in order to prevent its being wasted. Before the Calero Reservoir was half full, it was necessary to halt this process and release the water on account of flooding the McKean Road.

The Almaden-Calero Canal cost far less than originally estimated, but both dams cost more than estimated due to the much greater amount of foundation excavation required by the State than that estimated by the Engineers. In addition, it became necessary, after the Almaden embankment was over half completed, to change the location and increase the size of the dam. The delay, incident to these changes, caused additional costs of field engineering and inspection.

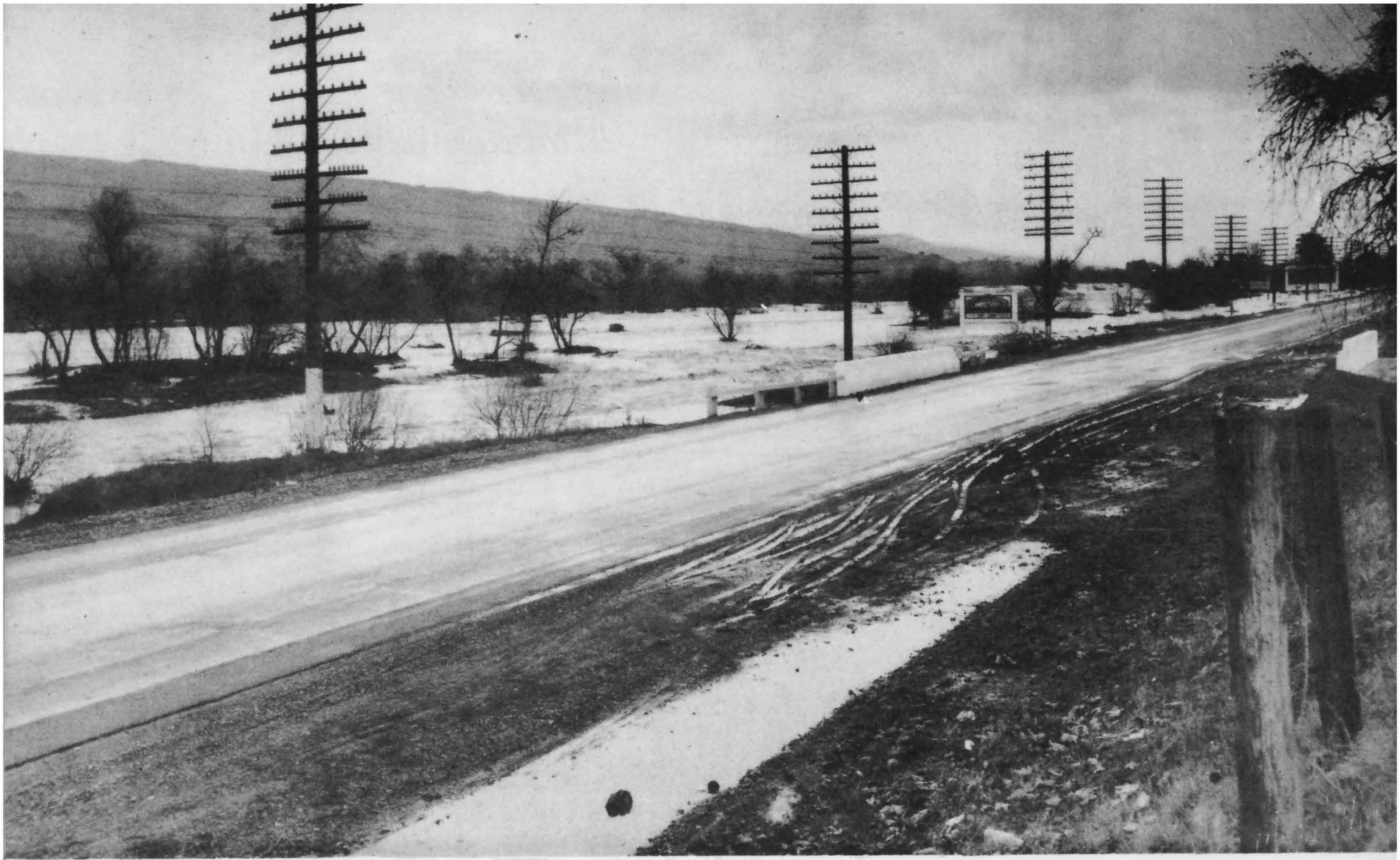
The result was to increase the cost of this unit approximately $124,000 over the original estimates.



INTAKE

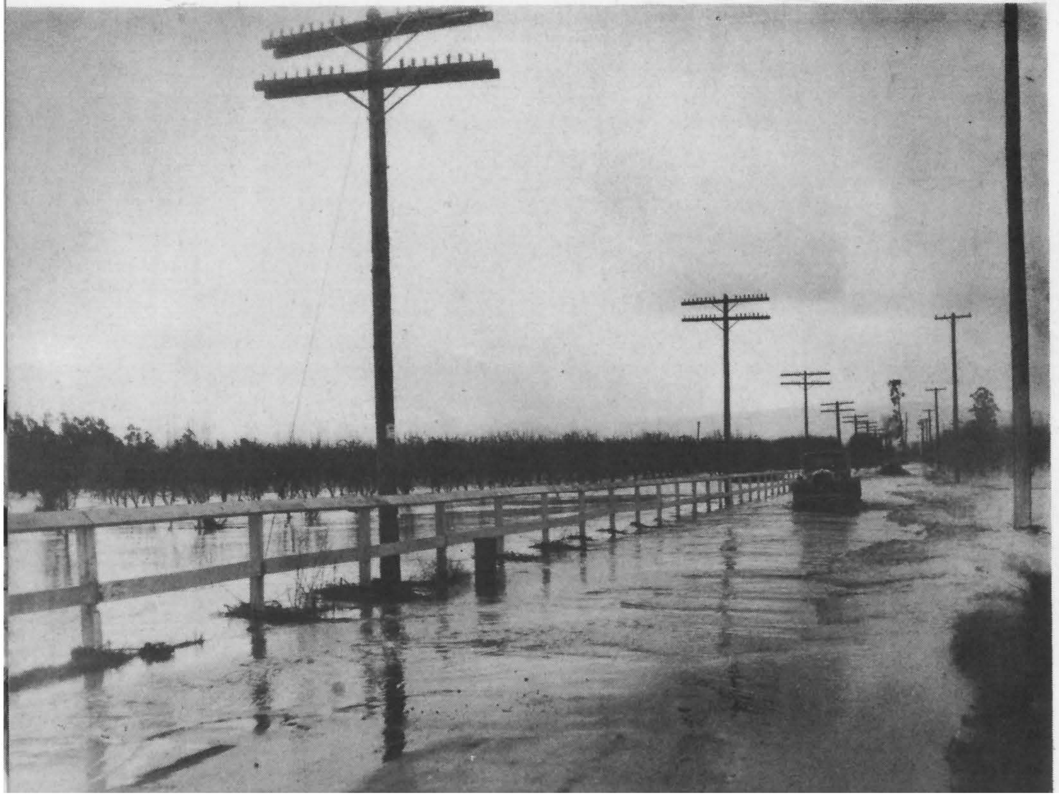


TYPICAL SECTION



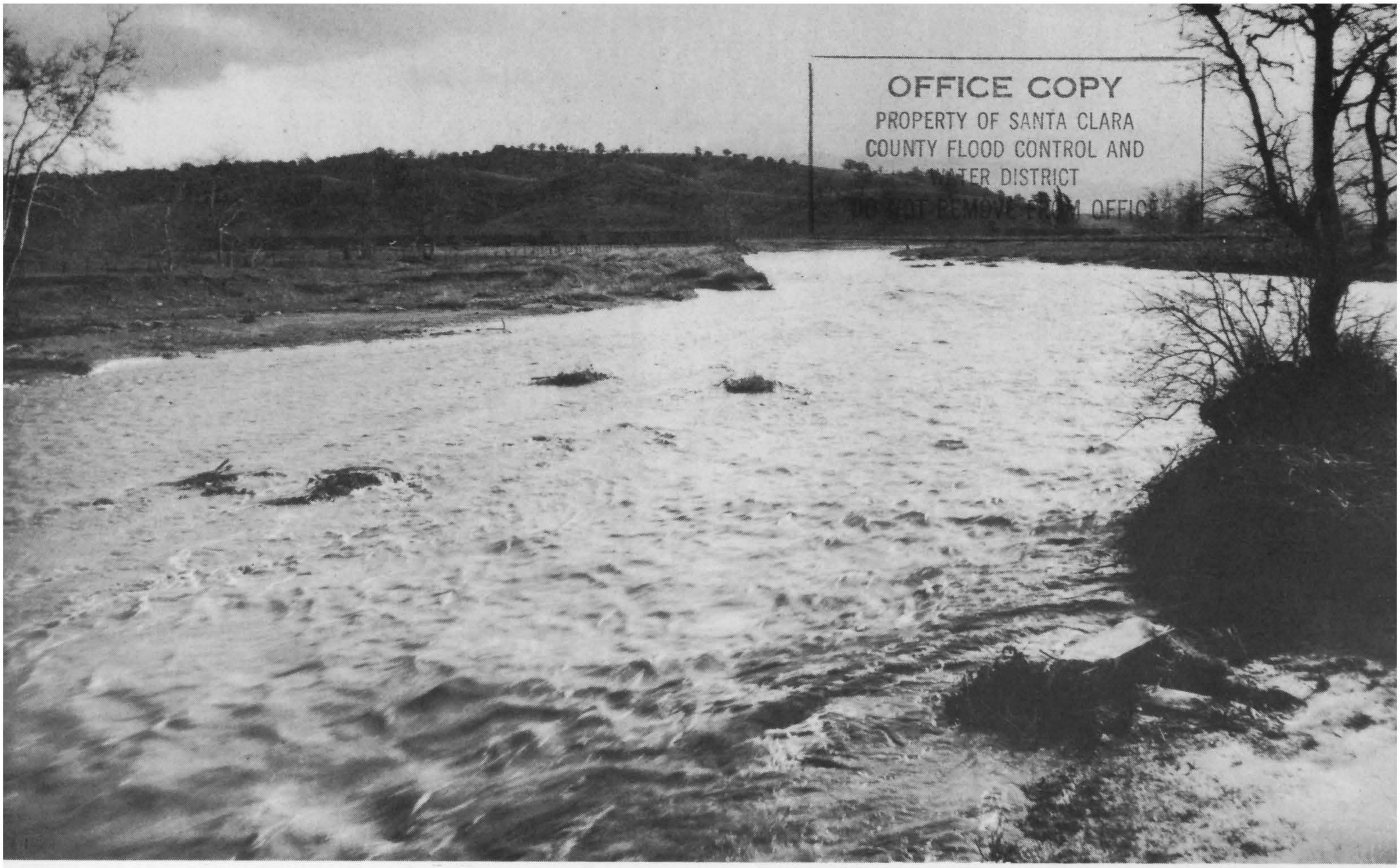
COYOTE RIVER IN FLOOD. In one day more than 50,000 acre feet of water was wasted into San Francisco Bay from this stream. (This can never occur again after the dams are completed.)

This season (1935-36) the Coyote River never overflowed its banks in spite of 16 days of continuous rain in February. This was due to the partial operation of the Coyote Reservoir. Such waters as did flow down the Coyote beyond the capacity of the streambed to absorb, were due to the runoff which occurred below the Coyote Reservoir, and to the fact that the Coyote dam was not completed for lack of funds. Had the Coyote dam been completed, this waste would have been entirely prevented.



OVERFLOW of the Coyote and Guadalupe Creeks on the Alviso Road near Agnew.

No longer will the people have to worry over conditions such as shown in this picture. The voting of additional bonds will enable the District to complete its rights of way negotiations and utilize its detention reservoirs so as to eliminate any possible repetition of this condition, thus relieving the people of the northerly portion of our Valley from this inconvenience, and saving the County thousands of dollars in repairs to the highways.



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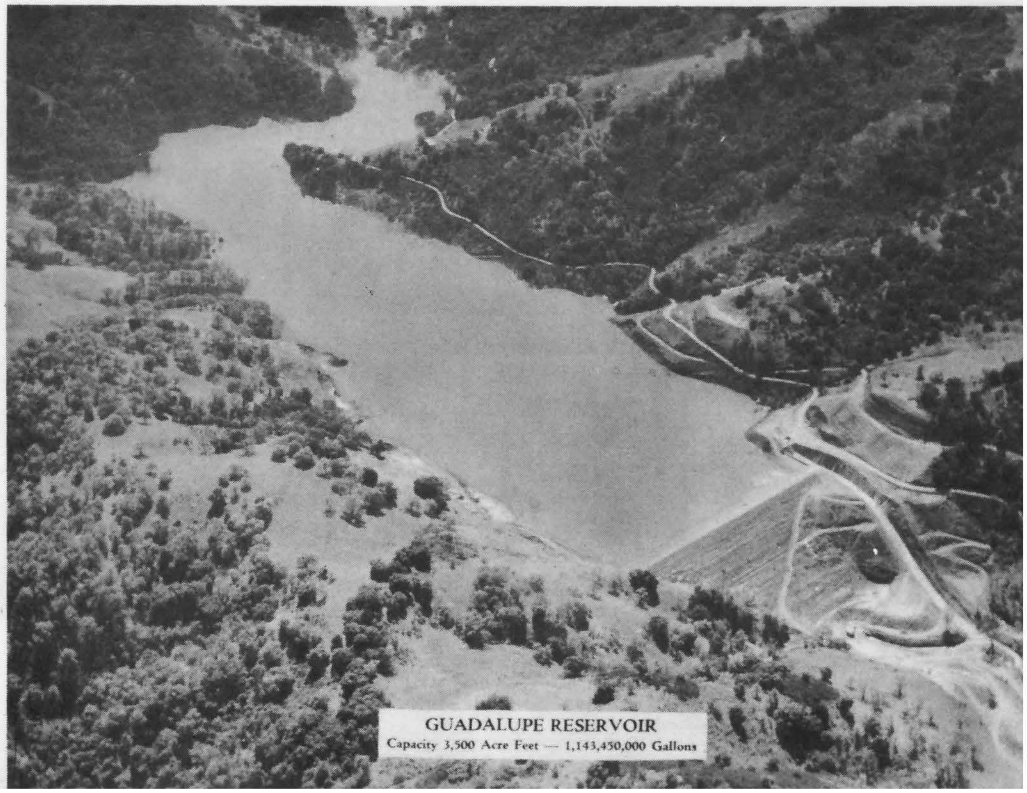
FLOOD WATERS IN GUADALUPE CREEK, 1934

This season (1935-36) there have been practically no flood waters wasting down the Guadalupe, due to the construction of the Guadalupe, Almaden, and Calero Reservoirs. The Guadalupe Reservoir was completed and no water was wasted from that branch of the creek, and had not the lack of funds, necessary to relocate the McKean Road, prevented the full utilization of the Calero Reservoir, there would have been no water wasted in the Guadalupe Creek.

In addition to stopping this waste of flood waters into the Bay of San Francisco, the construction of the Almaden-Calero unit and the Guadalupe Reservoir, shown at right, together with the Sausage Dams above Downer Avenue on Guadalupe Creek, have raised the water level in nearby wells as much as 90 feet.



GUADALUPE RESERVOIR
Capacity 3,500 Acre Feet — 1,143,450,000 Gallons

What People Think About the Project

"The photographs are fine, and the Engineer's report on operating results is especially gratifying."

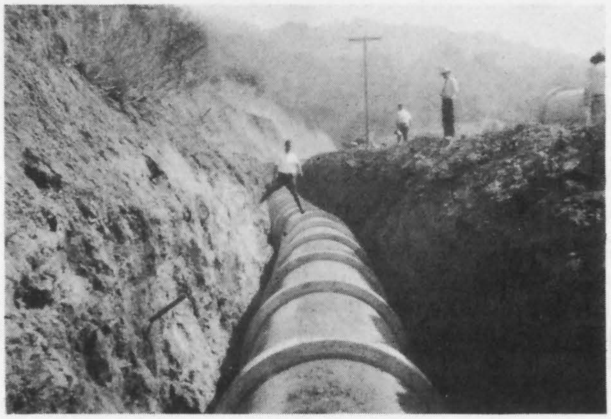
Hon. John J. McGrath, Member of Congress
8th Congressional District.

"We have looked with favor upon the proposed plan from the beginning and are naturally pleased to learn that it is performing up to expectations."

G. H. Russell, Senior Engineer-Appraiser
The Federal Land Bank of Berkeley.

"If we had loaned $2,000 to build a $4,000 house, we would certainly loan $400 more to complete and thus save our investment."

Paul Rudolph, Cashier, First National
Bank of San Jose.



"The results already indicated, show the value of the Project. Let us finish the job."

G. Logan Payne, Publisher and Owner,
San Jose Evening News,

"When we first came to Mountain View our wells were flowing 3 or 4 feet above the ground —since then they dropped 236 feet. Now they are coming up again."

Stephen A. Wright, Pacific Press
Publishing Co.

"It would be cheap if it cost another million."

Clarence L. Rich, Chairman
Farmers' Committee.

"My well has been dry for years, but has water in it now."

Nick Nelson, Rancher, Union District.

"The construction is sound, the work well done, and proof of the value is already furnished. We have in hand our money's worth, and the only thing to do is to vote the additional sum needed to complete the system."

San Jose Mercury Herald,
March 19, 1936.

"The construction of this vast Conservation Project has done much to help the unemployment situation. By all means let us finish the job."

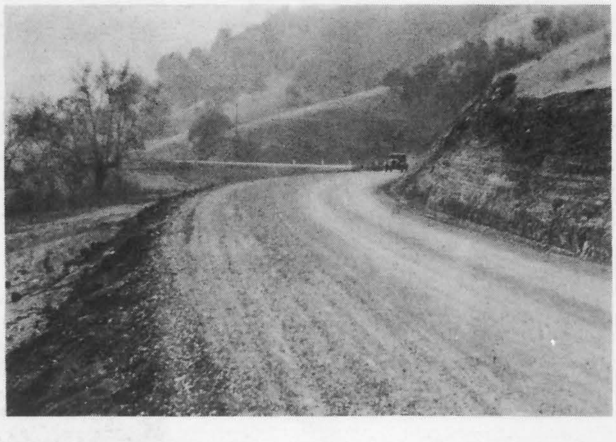
Fred G. Volkers, Secretary, Building
Trades — Central Labor Council
of Santa Clara County.

"Have saved enough in pumping cost to pay the taxes on my property."

Jos. A. Connor, Manager, Santa Clara
Walnut Growers Association.

"Did not realize there was so much water available. It is a wonderful job."

Roger Sherman, President, First National
Bank, Mountain View.



No Increase in Tax Rate Necessary

The present bond issue is being paid off at the rate of $80,000 per year and it is proposed that none of the new bonds will be paid off until July 1st, 1941, by which time $480,000 of the old bonds will have been retired.

The early maturities of the old bonds pay 5 per cent interest so the interest on the old bonds is being reduced by $4,000 per year. Therefore, if the new bonds are dated July 1, 1936, the interest on the old bonds will have been reduced $8,000 per year before interest starts on the new bonds. In addition, the surplus in the Bond Fund will be sufficient to take care of the additional interest requirements for the first two years, after which the requirements for both principal and interest will begin to be less until 1941 when the first of the new bonds are due; but by that time, the first issue will be so far reduced that the total requirement will not exceed that of 1936.

The Water Situation

THEN* . . .

"The actual drop in the water level in the last twenty years is 116 feet. This was at the rate of 5 feet a year until 1933 when it fell 21 feet."

"Studies made by the Water Conservation District Engineer of the data furnished by the *Division of Water Resources of the State of California* show that while in November, 1932, the water table underlying 33,000 acres of the District stood below sea level; by December, 1933, this area had almost doubled — in other words, at the latter date the water level underlying 60,000 acres of the District, or 51.3 per cent of the total pumping area, was below sea level."

"Concerning the tremendous expense to which water users are subjecting themselves by reason of the falling water level, Mr. Harry L. Haehl and others have investigated and their findings indicate that, due to the falling of the water table, the farmers of the Valley, to pump the same amount of water, are paying at least $800,000 a year more for power bills than they would if the water were at its 1915 level."

NOW . . .

1934-35 ....UP **8** feet

1935-1936 (April 1st) ....UP **13** feet

Total...**21** feet

And Still Going Up!

December, 1933 ....**65,280** acres below sea level

April 1, 1935 ....**41,600** acres below sea level

April 1, 1936 ....**30,800** acres below sea level

Danger of Salt Water Intrusion Gone!

1936 Pumping Costs $200,000 less than in 1934!

This Will Increase from Year to Year as the Water Level Rises!

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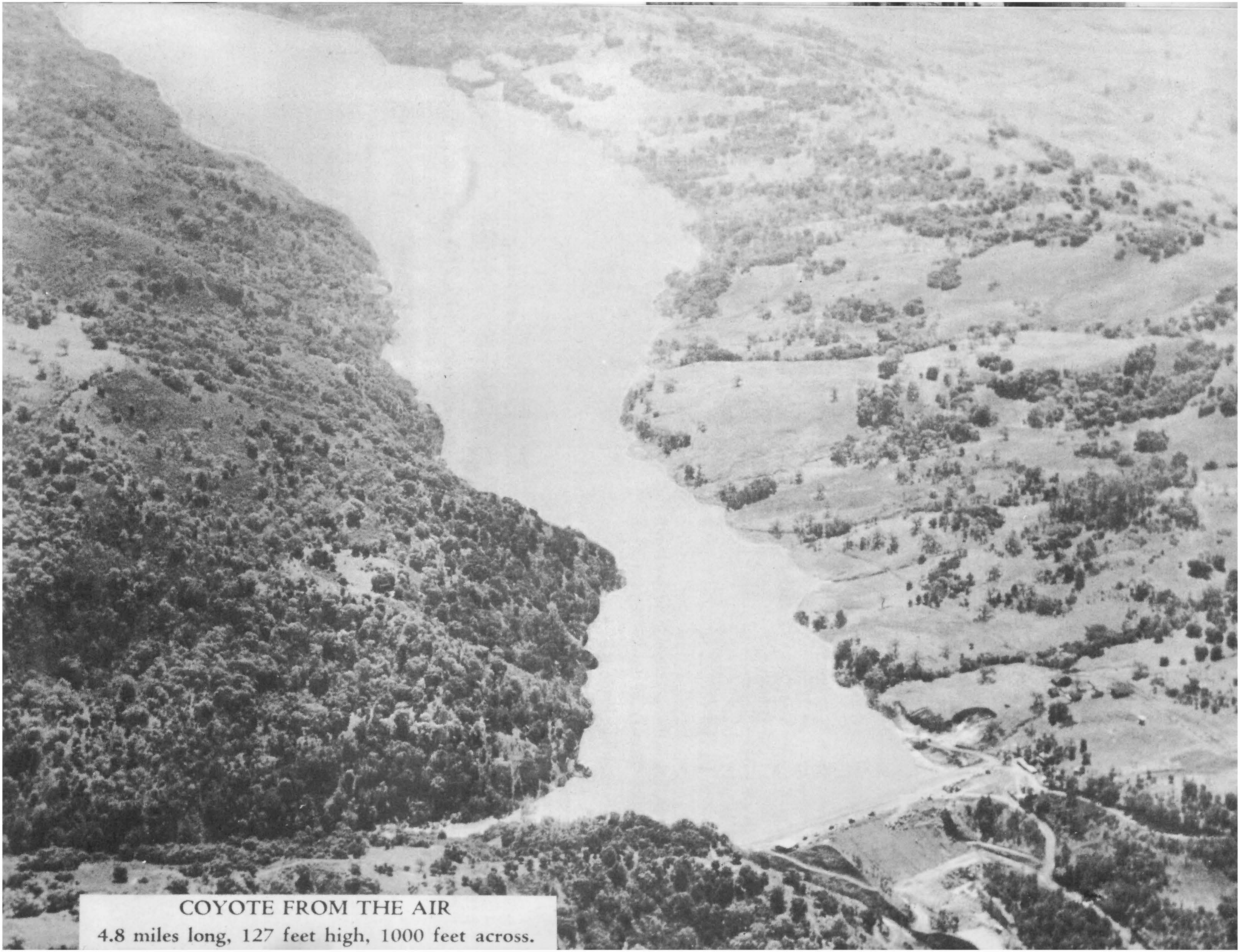
*From pamphlet entitled "Water Conservation Project" published in 1934 under the auspices of the Citizens' General Water Advisory Committee composed of R. H. Borchers, John D. Crummey, Chairman, E. N. Curtis, John S. Williams, Sr.; W. W. Lester, Nick Nelson and Clarence L. Rich, Chairman.



COYOTE FROM THE AIR
4.8 miles long, 127 feet high, 1000 feet across.

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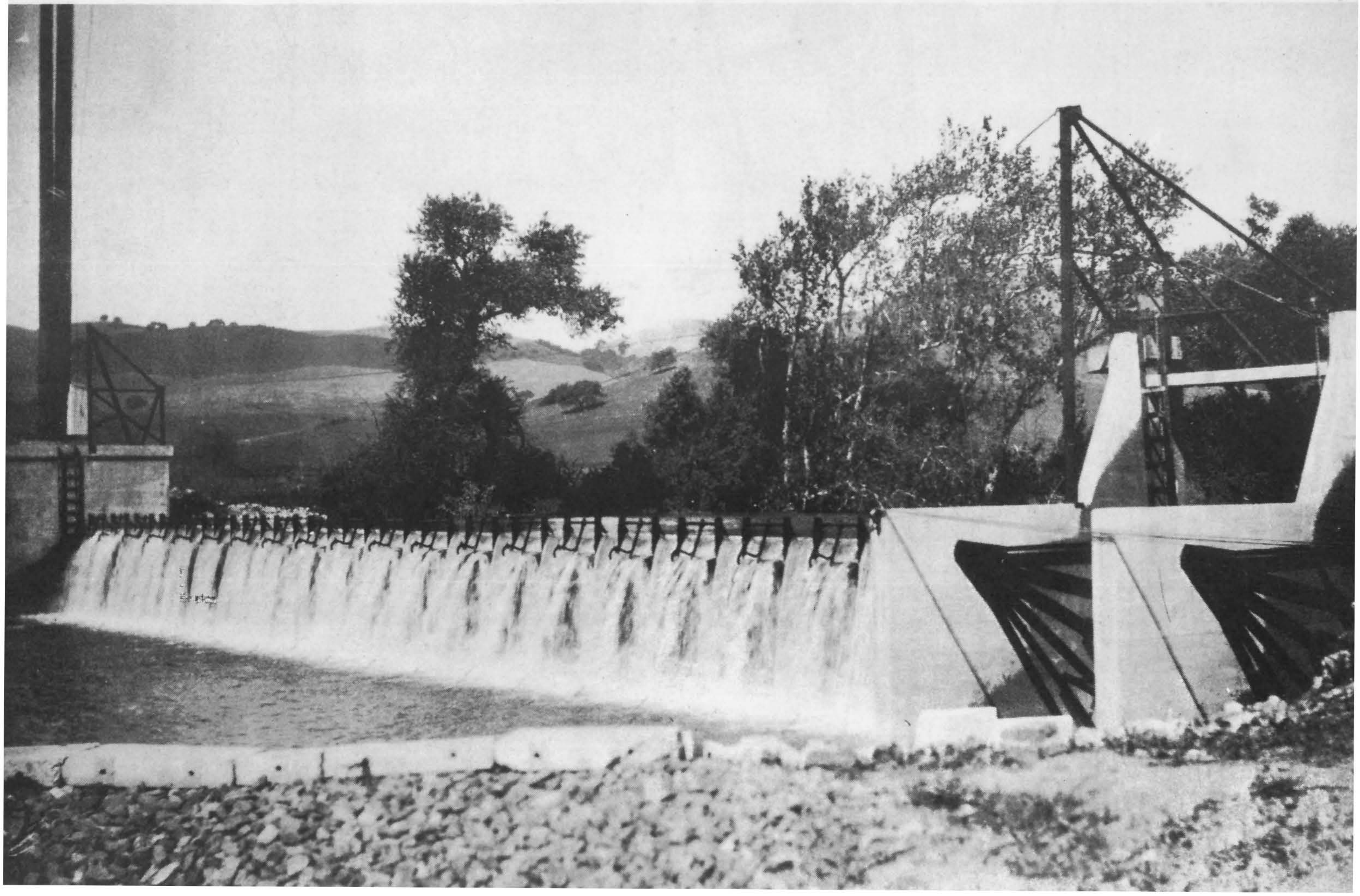
Data on Santa Clara Valley Water Conservation District Reservoirs

Total Capacity, 49,750 Acre Feet, 16,253,325,000 Gallons

	ALMADEN	CALERO	COYOTE	GUADALUPE	STEVENS CREEK	VASONA
Capacity of Reservoir — Acre Feet	2,000	9,500	30,000	3,500	4,000	750
Capacity of Spillway — Cu. Ft. per Sec.	7,000	5,000	33,000	6,000	10,000	12,600
Area of Reservoir — (Max.) Acres	62	329	688	75	95	79
Length of Reservoir — (Max.) Miles	1.1	2.2	4.8	1.1	1.1	0.8
Height of Crest above Streambed — Feet	105	90	120	129	120	30
Dam Crest Length — Feet	460	840	990	650	1,000	1,000
Dam Crest Width — Feet	20	20	100-160	20	20	20
Dam Base Width — Feet	545	495	945	650	620	153
Cubic Yards of Fill	250,000	550,000	1,060,000	520,000	530,000	70,000
Diam. of Outlet Pipe — Inches	36	36	50	36	50	42

All dams rolled earth except Coyote which is faced with a rock blanket on both sides.

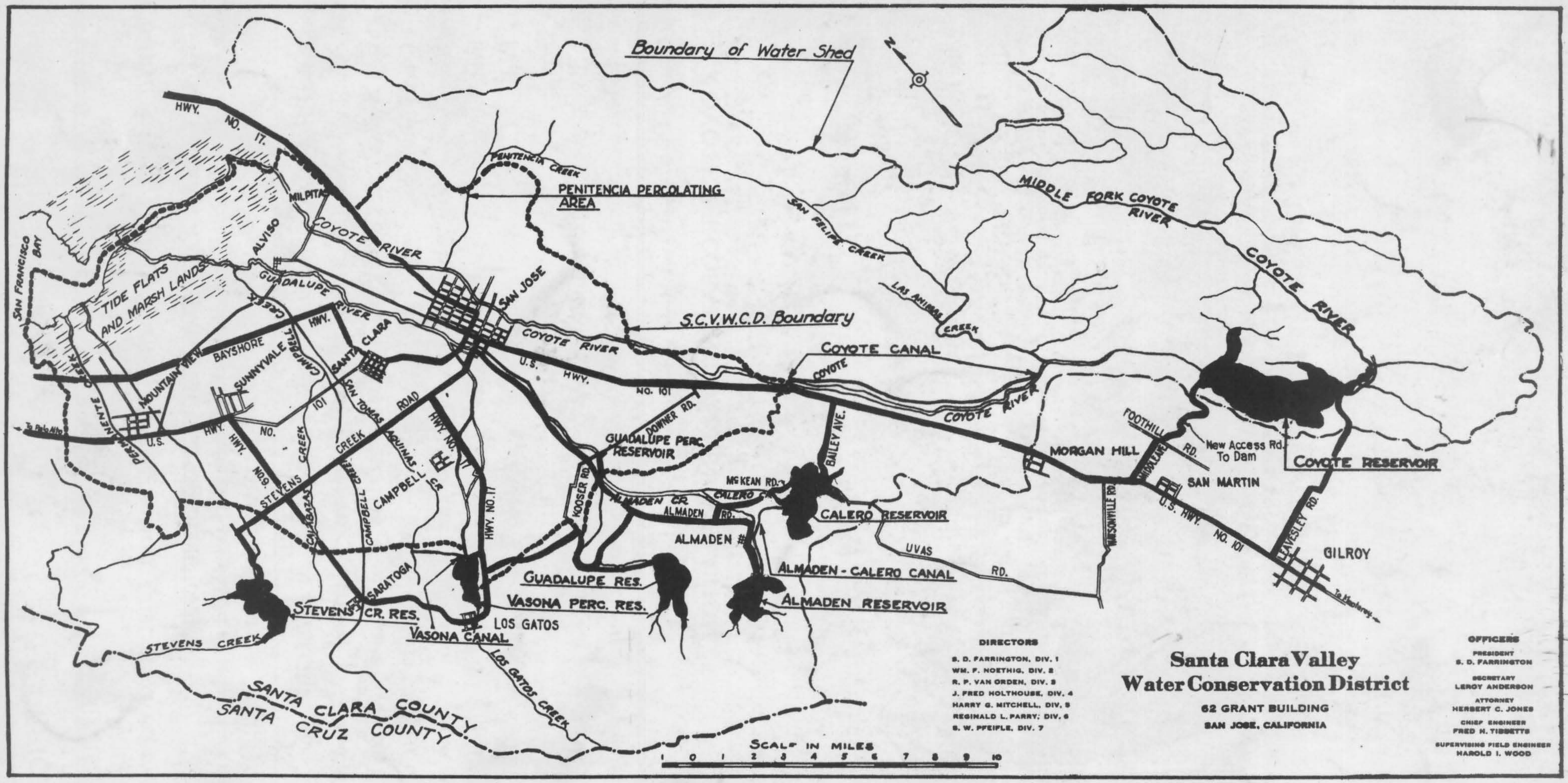
COYOTE PERCOLATING DAM IN OPERATION



Santa Clara Valley Water Conservation District

130,000 Acres in Santa Clara Valley

Map Showing Detention Reservoirs and Main Highways Leading Thereto



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